

PCT/JP2003/014530

CLAIMS:

1. A touch sensor comprising,
a first coupling member constructed in a united manner with a pedestal,
5 plate springs arranged to be parallel each other, one end sides of the plate springs being fixed to both ends of the first coupling member respectively,
a second coupling member to couple other ends of the plate springs to each other,
a magnet installed in a manner that the side of each plate spring corresponds to the side of either magnetic pole,
10 a pipe mounted to each plate springs in parallel to the direction of the magnetic poles of the magnet, and
a detecting means located near the magnetic pole boundary line of the magnet for detecting a displacement of the magnet caused by an external force applied to the pipe,
wherein the each plate has a rigid part with rigidity on the base end side, and an
15 elastic part with elasticity on the both end sides.
2. A touch sensor as claimed in claim 1 characterized by comprising an elastic body to cancel the effect of gravity on the second coupling member.
- 20 3. A touch sensor as claimed in claim 1 or 2 characterized by comprising,
a supporting member having one end side fixed to the first coupling member and other end side provided with the detecting means or the magnet, the supporting member inclined from the one end side to the other end side, and
an adjusting member for adjusting the distance between the supporting member and
25 the pedestal,
wherein the magnet or the detecting means is mounted to the second coupling member.
4. A touch sensor as claimed in any of claims 1 to 3 characterized in that holes are provided to portions where displacement is caused by an external force applied to the pipe.
30
5. A touch sensor as claimed in any of claims 1 to 4 characterized in that one end of the pipe is provided with a rigid anvil to receive an external force.
- 35 6. A touch sensor as claimed in any of claims 1 to 5 characterized by comprising a notifying member for notifying whether or not a signal is output from the detecting means.

PCT/JP2003/014530

7. A touch sensor as claimed in any of claims 1 to 6 characterized in that pedestals are provided to at least two parts on a bottom surface of the pedestal.
- 5 8. A touch sensor as claimed in any of claims 1 to 7 characterized in that the pipe is provided with a regulating member for regulating a displacement of pipe body.
9. A touch sensor as claimed in any of claims 1 to 7 characterized in that the pipe is provided so that its other end regulates a displacement of the pipe body.